It would be possible, of course, to extend it into a more fully market base system in which the public and the private sector compete for the use of spectrum. But I felt that at this stage, the European environment wasn't ready for such a radical step or as I think it is ready for the introduction of the market base reforms that I've recommended. Thank you.

MR. KURTIS: My name is Michael Kurtis. I'm the president of Kurtis and Associates PC. Since we're doing disclaimers, unfortunately, I am an attorney and I'm an engineer. So my perspective though is quite narrow. It's from that of the rural telecommunications carriers providing commercial mobile radio service in the nonurban areas such as a PCS and cellular. From our perspective, there's been a lot of talk about going with someone acquiring all the spectrum and then privately managing it. And I guess I'm hearkened back to paraphrase the words of Winston Churchill, in that the FCC is a very bad way to regulate spectrum usage, but I fear the others are much worse.

And the situation that we are primarily concerned about is going down a track of one size

fits all. That urban versus rural area is set with the same implementation of rules and not only from the standpoint of what meets the needs of the urban versus what meets the need of the rural, but also the consideration of the interplay between them. For example, just this week, the FCC announced a plan to sunset the analog standard for cellular, which you know there were a lot of comments filed. But we need to see what the order says because while there is a need for greater spectrum efficiency in the urban areas, what the rural carriers had filed concern about is we are a rural carrier and the urban market to the left of us deploys one technology such as CDMA.

The urban market to the right of us deploys the other technology, TDMA. The analog standard is what allows all of my subscribers to be able to receive service in both of the markets and the concern that we have is even if we decided to build both technologies in our market, we still don't have a radio we could sell to a customer who wants to travel to both of the urban markets.

So the concern that we have is in developing a new spectrum model. We keep in mind that there's been a lot of money paid for licenses

already in this particular service, that there was a situation that extreme amounts of money that have been spent to develop networks and that we are meeting the needs of customers nationwide that are spending a considerable amount of money to purchase hand sets and I think have an expectation of being able to continue to have the right to utilize those handsets and to get service on a going forward basis.

MS. WARREN: Hello, my name is Jennifer Warren and I'm senior director for Trade and Regulatory Affairs at Lockheed-Martin Corporation and I'm an ex-FCC staffer and I am a lawyer. But while I was at the FCC, I served in both the International Bureau and the Wireless Bureau, so bringing both the satellite and the wireless perspective. And coming from Lockheed-Martin, which has historically has been viewed as a satellite services, a company with satellite services by us. My portfolio has expanded considerably over the last few years to where it now incorporates interest as a business licensee, as an experimental licensee, as an aeronautical services provider, as a system integrator recently entering into the public safety arena.

So I have a very marked interest, and with the outcome of the special policy task forces, because it will basically affect every aspect of some of our businesses. And so that's why I'm here and I'd like to introduce into this discussion, while we've been focusing on spectrum rights, we really haven't focused on responsibilities. And when I raise responsibilities, I don't mean what are our responsibilities to protect either our neighbors or those with whom we share the band, but what are the responsibilities that are imposed on the licensees; licensees versus users' responsibilities in the spectrum.

MR. MILLER: Hi, I'm Larry Miller. My background started in civil defense, public safety communications about 23 years ago; from there into transportation, and for the last 12 years I've worked for one of the FCC certified frequency coordinators, and I can appreciate the reference to Winston Churchill. You know, frequency coordination is a process that receives a significant amount of criticism and it probably is a very, very bad system but it's better than anything else that anyone has ever come up with. And so my basic experience is with shared use, how

to limit technical and operational parameters to new licensees so that they can coexist with the existing incumbents in the band.

MR. HAZLETT: Hi, my name is Tom Hazlett and I am a former FCC Chief Economist where my primary function was to be research assistant to Evan Kwerel.

(Laughter.)

And I'm currently a Senior Fellow with the Manhattan Institute and my views on spectrum reform are laid out in a 4-page filing in this proceeding attached to which is a 20-page paper that was written last November and advocated that the FCC set up a spectrum policy task force and now that the Commission is following my instructions, I expect forward progress will be substantial. I also have a 200-page plus paper that is available on my website and published last year also on the website by the Harvard Journal of Law and Technology.

In less than 200 pages, let me summarize the top 10 points. One, current spectrum allocation policy is ultra-conservative, creating large social losses. The task force should pursue a better balancing of costs and benefits for

wireless entry and innovation.

Two, competitive markets will accomplish this if permitted to.

Three, the path to this market solution is via deregulation. Rules limiting flexible use of frequencies assigned to licenses should be removed. Laws and procedures blocking access to under utilized bands by new entrance should be eliminated.

Four, the primary function of the law is to allow spectrum users clear control of frequency space with liability for damages incurred. The regulatory function is not to (a) create markets; (b) settle all interference issues; (c) find the perfect path to liberalization.

Five, interference dispute resolution now a detailed ex ante Commission determination, inefficiently front loads the regulatory process paying incumbents to stretch out real arguments. Interference adjudication should move to a liability framework.

Six, deregulation is not a windfall. Nations that grant substantially more rights to wireless operators see lower license bids at auction. Liberalization will result in wipeouts

for many operators and licensees which should not be compensated.

Seven, do not take broadcast TV spectrum off the board on public interest grounds. On public interest grounds, the arguments are overwhelming that much greater social value would result where the airwave is redeployed. Markets can do that.

Eight, spectrum scarcity continues to be a problem in both licensed and unlicensed uses, and rules that reduce coordination problems are the goal of proconsumer public policy.

Nine, shared use does not have to be unlicensed. The most successful application of spread spectrum technology, for example, is codivision multiple access via licensed broadband PCS. Flexible rights promote investment, technology, and spectrum sharing.

Ten, a free and competitive market in wireless bandwidth will allow entrants to expeditiously gain spectrum access by paying the marginal cost of bandwidth. That is the public policy optimum. Thanks.

MR. FURTH: Well, I think the introductions have touched already on a number of

issues that we'll be coming back to and I expect that there will be some very interesting discussion of those issues. I wanted to start off with what I might call a clean sheet of paper question, and we actually asked the panelists to think about this question ahead of time and it's based on a hypothetical. In order to perhaps get some sense of where it is that the people on this panel would want to ultimately go with respect to defining spectrum rights and responsibilities, and the hypothetical is as follows. Assume that you have essentially two spectrum use models at your disposal. Assume that you are in the role of the regulator, you're in the role of the FCC, except perhaps with some plenary powers that even we do not have.

The two models, one is an exclusive rights licensing model that looks more or less like our PCS rules, just to take an example. The second model is an unlicensed model that looks surprisingly like our Part 15 rules to take another example. You have the choice to apply either model to any spectrum from 300 megahertz to 300 gigahertz. If you would like you can also reserve spectrum for specialized uses that you don't want

to license or assign or allocate under either model. Assume that you're dealing with today's technology and assume, at least for the sake of the initial hypothetical, that you don't have any incumbents. This is the last time you're going to be able to make that later assumption by the way.

And the question I'd like the start with is which model would you use or would you use both and why? How would you decide which model to use in any particular band of spectrum? What types of spectrum uses, if any, would you reserve spectrum for and not apply either model to them?

Anybody want to take a crack at that?

MS. WARREN: Sure.

MR. FURTH: Jennifer, go.

MS. WARREN: I'll be the target for everyone else's comments. I guess I would first say that I wouldn't pick a band. I'm going to talk more generically than that, but I'm going to take about models and I would have both models. I would have an unlicensed model. I do think there's obviously great merit in the unlicensed. It is innovative and all the things we've heard over the last three days from all the unlicensed speakers that have been here. But I do think there are

responsibilities that the licensed uses offer.

There's certain customer responsibilities, consumer responsibilities if you like, that go with being a licensed user, particularly if you're CMRS or some of the other categories. And I think there's, unless we're assuming away public interest obligations of the FCC which you did not address, I'm assuming there are responsibilities beyond just a market approach. And I don't equate public interest with market based spectrum management.

So I would have both, recognizing as I said that there are interests in both. I would not reserve -- I'm not really sure what you mean by reserve, but if you mean allocate and just don't put out for assignment purposes. Yes, I probably think it's helpful to allocate spectrum for services to give product developers an indication of where they might build to and explore, know what they're sharing if any sharing environment, or what their exclusive rights might be. But I would allocate and then when there's a petition or license request upon then proceed with assigning. I wouldn't artificially withhold and I wouldn't artificially throw out there with no proponents for

use. And we've seen both situations and neither one has produced great results.

MR. GATTUSO: What kind of system would let a guy like me make a decision that's so important which is, of course, I'm being facetious, but not entirely because I think one of the essential things I'm talking about is how the system works, how the rights work, and how the system makes decisions like this. And does it come down to putting a decision like that in the hands of somebody who works for the government? And a lot of people argue that government is the only place that can make the decision or is the government's role slightly different?

And I think that's part of our debate here because if there are certain rights, if there are certain things in place that lead to an efficient outcome, there may be more of a framework that the government establishes rather than decisions. Now, if I did have to make the decision, the first thing I'd say is it's too easy to say I'd use them both because I like to balance things, I'd use them both. But I think one of the things I'd want to look at is what decision would be most likely to accommodate the best result over

the long term, and I would ask if you went to one or the other of these, are there exclusive rights or the shared one? Is that something that could evolve into a different system?

Sometimes I think if we maintain the concept of spectrum with a consistent idea of rights starting with the type of titling rights and then going to a type of spectrum use rights, you could almost think of the commons approach as something where the title is held with the government, and in fact, there's an exclusive title with the government and the government has chosen to open this up for a commons uses. So you could actually argue, I'm stretching this, but I could argue you could actually have an exclusive rights model that could accommodate either one at least in terms of the ultimate title.

MR. CALABRESE: I would -- I think especially given the assumption that given today's technology, that we would certainly need to have a version of each of these. But what I'd want to make sure, I think above all, is that the former does not constrain the later. In other words, that exclusive, for as long as we have licensing, that the exclusive rights and flexibility do not

constrain the development of the unlicensed technology that can dynamically share.

And to understand that I think it's important to make a distinction that has been somewhat lost in some of these conversations, and that is when we talk about unlicensed Part 15 type, I think most people think about today's technology based on, you know, WiFi technologies, 802.11 and so on which really are our means to share wire line connections using a hub and spoke architecture. It operates on a channelized basis. But what David Reed and some others have been talking about, for example, in the last panel, called open spectrum is something very different. I mean that is really three to five years off, but it is more of an ultra-wide band technology that creates a potential for ad hoc mashed user controlled networking that dynamically shares spectrums and serves as repeaters for traffic between those. So it's way beyond WiFi.

Okay, so when we look at the word unlicensed we can't just think about today's technology. We have to make sure that the bundle of rights and the type of flexibility allows room for the evolution of interference standards and so

on in order to unleash the potential technologies that are still on the drawing board.

MR. KURTIS: Starting out with the clean sheet of paper, I had all kinds of great ideas, but I kept settling back to the concept that there is a need for a bifurcated regime. We do need to have spectrum that has property rights and I would go so far as to say a standard of usage. And what I keep boiling down to is if I'm using my cell phone, I want to be able to use it as I travel. If I move from Indiana to Virginia, I want to make sure that someone broadcasts television signals that will work on the TV set that I bought in Chicago for the technology that that particular TV station chose to put out.

Market place is fine and there are always applications where a market-driven spectrum usage is going to have its needs and I think we've seen that in the Part 15 where you can have very different flavors of noncompatible wireless handsets that are talking to the bay station that's plugged in in the family room. But I think once you get to other items that are intended to allow common usage over the airwaves, I think you have to back down from that market place model, and there

are certain items that we need to have a body such as the FCC to make sure that the industry grows, that the market place that fosters the development of the high quality television set that's available for purchase because the people manufacturing it know that there will be a market for a period of time for that technology. So I very much favor keeping the split approach.

MR. STROH: I don't favor keeping the split approach, but I recognize that the licensed allocations are a necessary evil for the time being because they're not going to get blown away. And we're constrained to some extent. For example, we're not going to rebuild the highway system in some better model to support trucks and cars and bicycles, ideally. We have to live with what is there. What I do think is that it's the new digital technology, the software-defined radio, spread spectrum, very low power operation signal processors have made it possible for us, for licensed exempt users, to piggyback on licensed spectrum that's not being used. And I use the example of the television broadcasting spectrum that's pitifully under utilized in rural areas at this point.

Why not a radio that could take advantage of that fallow spectrum in rural areas to provide broad band services without the necessity of completely rebuilding copper infrastructure or putting up with the irritating delays of satellite broadband? The industry that I watch most closely, the wireless ISP industry is doing this now. They're making it work with 2.4 gig spectrum but there are places they can't go. There are cost points they can't meet, people they cannot service because of the limitations of the technology. But if they were permitted to buy equipment that could make use of that spectrum now, and the MMDS spectrum is even worse in how pitifully underutilized it is. They could provide much greater services including voice.

MR. HAZLETT: The goal of the Commission, I believe, should be a cheap spectrum policy. This has been lost, it's certainly with license auctions on the table the last decade or so. People talk as if you're trying to maximize those rents you can extract through high prices for licenses. It's, of course, the wrong approach and the way to get to a cheap spectrum policy is not to do it through artificially suppressing the price

signals that people face. It's to actually allow lots of competing exclusive use licenses, whether it comes through what you want to call band managers or exclusive use licensees, or even to some extent unlicensed users who could have, and in fact, do exercise property rights effectively even under current unlicensed rules.

But the thing that has to be remembered is that coordination amongst these various users is still important. You just read through this record, the filings here, or any of the other proceedings that are similar on spectrum policy, licensed or unlicensed. And you have all kinds of demands on the Commission to impose a standard. We've heard about seven of them so far. To impose rules, to impose use restrictions on various alternatives. Seems rather late date to have to argue that this is why God created competitive markets, not the portals, okay?

The portals should be used for something useful, and it's not to micromanage these markets. Now the useful function is to get lots of competing and flexible spectrum assignments out in the market place so all kinds of uses, shared, unshared, it's hard for me to think of an unshared

use, but if you want to call it that. Then to get out there, but do it in a way that the transaction's costs of putting coordination together, amongst all the shared use can be handled reasonably.

And again, there's no contradiction between these sort of open entry environments and exclusive use licensing by the FCC. In fact, if you have a number of competing band managers or band owners in the marketplace, they will, in fact, invest to bring the traffic in, to bring the shared use in, and to manage and coordinate new infrastructure amongst those multiple users to limit these conflicts. And all these examples, like the TV spectrum that can't be used, that's a tragedy of the commons, not of exclusive use licensing.

The commons is, in essence, the socialization of the spectrum through the regulatory process. If, in fact, there was ownership in the market for those unused rights, of course you can have these kinds of contracts.

It's important also to understand that the great thing about unlicensed is the "un." And the places where it's most effective is where the

real cost of spectrum is low; not artificially low, but where it is low and it will probably stay low for some time, particularly in environments where there will not be as much competition or scarcity. For example, in rural environments some of these wireless ISPs are doing very well there and there's a lot of aggressiveness there.

Local area networks, where property owners assert de facto control in the coffee shop or the airport waiting area or what not. These sorts of areas can be, in essence, licensed exclusively through the unlicensed process. In fact, they are being used that way today so coordination can take place. This is what the FCC should look to, how you can get these decentralized decisions and all the flexibility that that entails. It was said that one size fits all is wrong. That's absolutely correct. One size fits all is what you get when you regulate and micromanage from Washington the diversity and variety that comes through decentralized decision making in allowing the market to come up with various uses and to maximize traffic because you as the rights owner of the bandwidth can do that. That's where you get the variation that will

maximize consumer welfare.

MR. CALABRESE: I thought I'd interject in order to really confuse everybody since Tom, who I agree with completely redeploying broadcast spectrum, but when he says that the broadcasters or the broadcast spectrum is a commons, you know, I would think that quite the opposite is true which is that actually the broadcast spectrum would be the perfect home for a commons and that, in fact, the commons, when we talk about unlicensed devices, dynamically sharing, that that's the ultimate market solution because what that does is it takes the bureaucrat, whether government or corporate out of the middle.

What it does is it allows the equipment manufacturers and the software manufacturers to put more sophisticated devices directly into the hands of individual citizens, and then they can decide, you know, how and when they want to communicate. An open spectrum imagines that on a peer to peer basis. So I think the most important point in all this is to not

-- we obviously have to continue these two models, you know, the licensing and the commons together for quite some time.

But we should be sure that the former is not impinging on the development of the later, because we're really in a major historic evolution, I mean from analog to digital, from dumb devices to cognitive radio, from narrow, from screaming over narrow bands to whispering ultra-wide band, from exclusive to sharing, from scarcity ultimately to abundance. And so we also have to change from this sort of zoning exclusive rights zoning model to more and more and more of a commons model.

MR. FURTH: Let me ask a question here because I'm hearing a number of people talking about wanting to use both models, either because they think it's correct as an ultimate policy goal or because they see it as a practical necessity that we're not going to get rid of one model at the expense of the other ultimately. But I think I want to go back to a point that Joe made which is, is this really a decision that he or I or us at the FCC should be making? Is it inevitable that the FCC has to make this decision or is there some way, in other words, through writing rules, or is there some way in which we can set up a structure of spectrum policy that allows this decision to be made in the market place and by the market place?

And if so. how would that happen? What would be the rules that we would write in order to make that happen?

MS. WARREN: Could I just say one thing? First of all, you would rewrite the Communications Act to get rid of public interest.

MR. FURTH: Why is that?

MS. WARREN: Because I think Part 15 when we talk about unlicensed devices, for example, the gentleman down there pointed out the caveat in Part 15 on licensed uses which is no expectation that this device will not operate or what was the exact language that you used?

MR. STROH: Must accept interference even when it causes undesirable operation.

MS. WARREN: Whatsoever. Do we want the customer, consumer, to have no rights and to give that much control, in some ways, to a greater upper hand to the manufacturers? I don't know. It's a question I put because Michael said something about putting the customers in control, the consumers in control because they'll just keep purchasing different devices as things improve. But I mean we have competing manufacturers and unlicensed devices, some rules, but Darwinian rules

is what I've understood -- everybody has said over the last three session. So where does the consumer come out in this?

MR. STROH: He has greater choice. He ultimately achieves greater choice.

MS. WARREN: He has greater choice or he's forced to constantly change?

MR. STROH: If you go into Target, you can walk up and down the aisle and there's 20, 30, 40 different cordless phones. You take your copy of Consumer Reports which has done the test and buy on the basis of which one Consumer Reports says operates the best.

MR. KURTIS: But the key is no matter which one of those you select, you can plug it into the jack and it's going to work. I submit to you that if you say, you know, let's throw it all open you're in a situation where you're walking down the aisle. There are 12 different models to pick from and there's only one that works with your particular landline telephone network.

To stretch the analogy, suppose you bought the WorldCom compatible toll phone and then something happens and WorldCom is not there and you can't move that phone to another competitor or you

have an AT&T TDMA phone that AT&T is phasing out and you're stuck with -- you're perfectly happy with it, but AT&T says sorry, can't use that anymore. But without defending AT&T which is a position I'm particularly uncomfortable with --

(Laughter.)

I am not aware, and David is probably in a better position to say this, that AT&T said turn off all your phones today because we're no longer supporting it because that gives the consumer the incentive to go out and shop around, I think there's going to be some type of a transition that recognizes the fact that that has been an adopted standard, that that unit is out there and they'll make it in their customers' best interest to migrate as they want them to migrate.

The customer always has the choice, but they have an underlying compatibility that they can rely on. Right now, for example, that phone would work analog. So they could use it in an analog mode.

MR. WYE: And at the risk of actually representing AT&T wireless --

(Laughter.)

Thank you to Michael for doing that for

me actually, it was very well done. Certainly we're in the middle of managing a transition now. I mean, my company at this point runs analog, TDMA, GSM, CDPD, GPRS. We've got a bunch of stuff going on and it doesn't make sense for me to go out and strand my customers. When we migrate them, they have the opportunity to migrate.

Now I will immediately point out the difference perhaps between Michael and AT&T Wireless. We actually were a little disappointed that the Commission took five years to sunset the analog rule.

We are trying to manage a transition now to greater speeds, higher use of digital technology, and you know, we believe that that is going to hinder our ability. I fully understand Michael's position. He certainly kind of lives in a slightly different world than we do. But you know, to go back to maybe the original question a little bit, clearly I think there's somewhat of a consensus, I think, on this group that you're going to have to have both even in a kind of clean sheet environment. I think you can see the benefits of having both types of models working together.

How do you decide how much of one and